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(54) FLUORESCENT MATERIAL OF TAG-TYPE MAGNETOPTICAL CRYSTAL AND ITS MANUFACTURING METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a fluorescent material of a TAG(Terbium Aluminum Garnet)-type magnetoptical crystal which has high uniformity of light intensity and color, and its manufacturing method.

SOLUTION: The chemical structure of this fluorescent material is (Tb3-x-yCexRey)(Al5O12), wherein in formula, x is $0<x\leq0.8$, y is $0<y\leq2.0$, Re is preferably gadolinium element but can be replaced with at least one kind of metal elements of rubidium, thulium, praseodymium, samarium, europium, dysprosium, holmium, erbium, ytterbium, lutetium, strontium, yttrium, vanadium and chromium. The fluorescent material is manufactured by a solid state reaction method, a combustion process, or a cosedimentation method.

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* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1]
A fluorescence material is a thing belonging to the fluorescence material of a terbium-aluminum magneto optics crystal mold. The structure of the chemistry of the above-mentioned terbium-aluminum magneto optics crystal is aluminum (Tb3-x-yCexRey) 5O12, and have the conditions of 0< x<=0.8 and 0< y<=2.0 in the structure of the above-mentioned chemistry, and further, although Re is a gadolinium element preferably A rubidium, a thulium, a praseodymium, samarium, a europium, The fluorescence material of the TAG mold magneto optics crystal characterized by the ability to replace with a kind of metallic element of a gadolinium, a dysprosium, a holmium, an erbium, an ytterbium, a lutetium, strontium, an yttrium, vanadium, and chromium at least.
[Claim 2]
It is the fluorescence material of the TAG mold magneto optics crystal according to claim 1 characterized by being able to consist of structure of the chemistry of the above-mentioned terbium-aluminum magneto optics crystal (aluminum(Tb3-x-yCexRey)5-zO12Mez), having the conditions of 0< x<=0.8, 0< y<=2.0, and 0< z<=1.0 in the structure of the chemistry, and Me being silicon of replacement or addition further.
[Claim 3]
The wavelength of the excitation light of the light emitting diode which the fluorescence material of the above-mentioned TAG mold magneto optics crystal uses is the fluorescence material of the TAG mold magneto optics crystal according to claim 1 characterized by intervening from 430nm to 490nm.
[Claim 4]
Sequence is followed in a terbium, aluminum, a cerium, and the metallic compounds of Re by the solid-state reacting method. Mixing, Chemical structure produces the fluorescence material of the terbium-aluminum magneto optics crystal mold of aluminum(Tb3-x-yCexRey)5-zO12 through polish, calcining, sintering, and the last polish. In the structure of the above-mentioned chemistry, have the conditions of 0< x<=0.8 and 0< y<=2.0, and further, although Re is a gadolinium element preferably A rubidium, a thulium, a praseodymium, samarium, a europium, The manufacture approach of the fluorescence material of the TAG mold magneto optics crystal which can be replaced with a kind of metallic element of a gadolinium, a dysprosium, a holmium, an erbium, an ytterbium, a lutetium, strontium, an yttrium, vanadium, and chromium at least.
[Claim 5]
Sequence is followed in a terbium, aluminum, a cerium, and the metallic compounds of Re with a combustion method. Mixing, Chemical structure produces the fluorescence material of the terbium-aluminum magneto optics crystal mold of aluminum(Tb3-x-yCexRey)5-zO12 through the dissolution, heating, a chelate, heating, sintering, and the last polish. In the structure of the above-mentioned chemistry, have the conditions of 0< x<=0.8 and 0< y<=2.0, and further, although Re is a gadolinium element preferably A rubidium, a thulium, a praseodymium, samarium, a europium, The manufacture approach of the fluorescence material of the TAG mold magneto optics crystal which can be replaced

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with a kind of metallic element of a gadolinium, a dysprosium, a holmium, an erbium, an ytterbium, a lutetium, strontium, an yttrium, vanadium, and chromium at least.

[Claim 6]

The chelating agent which the above-mentioned combustion method uses is the manufacture approach of the fluorescence material of the TAG mold magneto optics crystal according to claim 5 characterized by the ability to belong to an organic compound and release combustible gas and/or a gas with reducibility in a pyrolysis.

[Claim 7]

Sequence is followed in a terbium, aluminum, a cerium, and the metallic compounds of Re with common settling. Mixing, Chemical structure produces the fluorescence material of the terbium-aluminum magneto optics crystal mold of aluminum(Tb3-x-yCexRey)5-zO12 through the dissolution, alkalinization, churning, heating, calcining, sintering, and the last polish. In the structure of the above-mentioned chemistry, have the conditions of $0< x<=0.8$ and $0< y<=2.0$, and further, although Re is a gadolinium element preferably A rubidium, a thulium, a praseodymium, samarium, a europium, The manufacture approach of the fluorescence material of the TAG mold magneto optics crystal which can be replaced with a kind of metallic element of a gadolinium, a dysprosium, a holmium, an erbium, an ytterbium, a lutetium, strontium, an yttrium, vanadium, and chromium at least.

[Claim 8]

The alkaline substance which common settling uses is the manufacture approach of the fluorescence material of the TAG mold magneto optics crystal according to claim 7 which belongs to an alkaline organic compound and is characterized by forming a metal ion chelating agent in the shape of jelly.

[Claim 9]

The wavelength of the excitation light of the light emitting diode which the fluorescence material of the above-mentioned TAG mold magneto optics crystal uses is the manufacture approach of the fluorescence material of the TAG mold magneto optics crystal according to claim 4, 5, or 7 characterized by intervening from 430nm to 490nm.

[Claim 10]

It is the manufacture approach of the fluorescence material of the TAG mold magneto optics crystal according to claim 4, 5, or 7 characterized by being able to consist of structure of the chemistry of the above-mentioned terbium-aluminum magneto optics crystal (aluminum(Tb3-x-yCexRey)5-zO12Mez), having the conditions of $0< x<=0.8$, $0< y<=2.0$, and $0< z<=1.0$ in the structure of the chemistry, and Me being silicon of replacement or addition further.

[Claim 11]

The above-mentioned metallic compounds are the manufacture approaches of the fluorescence material of the TAG mold magneto optics crystal according to claim 4, 5, or 7 characterized by being the bases of a terbium, aluminum, a cerium, the oxide of Re, a nitrate, an organometallic compound, and a metal, or the mixture of those.

[Claim 12]

The manufacture approach of the fluorescence material of the TAG mold magneto optics crystal according to claim 4, 5, or 7 characterized by returning Re ion using a reduction gas by including the phase of reduction in others in front of the phase of the last polish.

[Claim 13]

The reduction gas in the phase of the above-mentioned reduction is the manufacture approach of the fluorescence material of the TAG mold magneto optics crystal according to claim 10 characterized by being H2/N2 (8% : 92%).

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